ELECTRONIC DEVICE AND METHOD OF CONTROLLING THE SAME

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 62/387,184, filed on Dec. 24, 2015, in the US Patent Office, the benefit of Korean Patent Application No. 10-2016-0055768, filed on May 4, 2016, and the benefit of Korean Patent Application No. 10-2016-0147636, filed on Nov. 7, 2016 in the Korean Intellectual Property Office, the disclosures of which are incorporated herein in their entireties by reference.

BACKGROUND

[0002] 1. Field
[0003] The present disclosure relates to an electronic device and a method of controlling the same.
[0004] 2. Description of the Related Art
[0005] Recently, apparatuses for providing images to a user via virtual reality devices have been developed. A virtual reality technique is a technique for providing realistic impressions to a user via manipulated sensory stimulation and may be applied to various industrial fields, such as games, education, medical practice, and journalism.
[0006] Unlike a conventional flat-panel display apparatus that displays a fixed-size screen image, a user may experience a 360-degree view via a virtual reality device. Therefore, the user may have an immersion feeling as if he/she is in another world. A virtual reality technique increases a user's immersion feeling by providing not only visual and auditory impressions, but also a tactile impression.

SUMMARY

[0007] Provided are an electronic device and a method of controlling the same. Furthermore, provided is a non-transitory computer-readable recording medium having recorded thereon a program for implementing the method, by using a computer.
[0008] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the presented embodiments.
[0009] According to an aspect of an embodiment, an electronic device includes a source configured to generate a magnetic field; a motion detector configured to obtain a coordinate of a user's hand based on the generated magnetic field; and a virtual reality providing device configured to reflect the coordinate of the user's hand received from the motion detector in a virtual reality based on a change of a location of the source due to a movement of the user.
[0010] According to an aspect of another embodiment, a method of controlling an electronic device, the method includes, based on a magnetic field generated by a source, obtaining a coordinate of a user's hand based on the generated magnetic field; and reflecting the obtained coordinate of the user's hand in a virtual reality based on a change of a location of the source due to a movement of the user.
[0011] According to an aspect of another embodiment, a motion detector includes a controller configured to obtain motion data including at least one of information regarding a movement of a user's hand, information regarding type of the motion detector, information regarding type of an acces-

sory coupled with the motion detector, information regarding operation status of the motion detector, and information regarding pressing of button of the motion detector; and a communication interface configured to transmit the obtained motion data to a virtual reality providing device that generates a virtual reality reflecting the movement of the user.
[0012] According to an aspect of another embodiment, a motion detector includes a sensor configured to sense a magnetic field; an input unit configured to receive a user input; a controller configured to generate motion data comprising first data based on the sensed magnetic field and second data based on the received user input; and a communication interface configured to transmit the motion data to a virtual reality providing device configured to generate a virtual reality environment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] These and/or other aspects will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings in which:
[0014] FIG. 1 is a diagram showing a configuration of an electronic device according to an embodiment;
[0015] FIG. 2 is a diagram for describing an operation of the virtual reality providing device, according to an embodiment;
[0016] FIG. 3 is a diagram for describing an operation of the electronic device, according to another embodiment;
[0017] FIG. 4 is a block diagram for describing a configuration of the virtual reality providing device according to an embodiment;
[0018] FIG. 5 is a block diagram for describing a configuration of a source according to an embodiment;
[0019] FIG. 6 is a block diagram for describing a configuration of a motion detector according to an embodiment;
[0020] FIG. 7 is a diagram for describing a method of controlling the electronic device, according to an embodiment;
[0021] FIG. 8 is a diagram for describing a calculation for correcting a movement of a head of a user, according to a change of location of the source;
[0022] FIG. 9 is a diagram for describing a method of controlling the electronic device that reflects finger movement information, according to an embodiment;
[0023] FIG. 10 is a diagram for describing a shape of the motion detector, according to an embodiment;
[0024] FIG. 11 is a diagram for describing arrangement of a sensor of the motion detector, according to an embodiment;
[0025] FIGS. 12A through 12D are diagrams for describing accessories that may be coupled with a motion detector according to various embodiments;
[0026] FIG. 13 is a flowchart for describing a method of controlling an electronic device, according to an embodiment;
[0027] FIG. 14 is a flowchart for describing a process for providing a virtual reality in the method of controlling the electronic device, according to an embodiment;
[0028] FIG. 15 is a flowchart for describing a method of generating a vibration via the motion detector, according to an embodiment;
[0029] FIG. 16 is a diagram for describing fields of motion data generated by the motion detector, according to an embodiment; and